

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



Application of Debra Reinhart et al. )  
Serial No.: 10/701,412 )  
Filed: 10/31/2003 )  
Title: Zero-Valent Metal Emulsion for )  
Reductive Dehalogenation of )  
DNAPLs )

United States Patent Office  
Attn: Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Sir:

Pursuant to the requirements of 37 CFR 1.97 and 1.98, applicants hereby request that the references listed in the attached Form PTO/SB/08A be considered and made of record in the above-identified application.

Respectfully Submitted,

  
Randall M. Heald  
NASA Patent Attorney  
Registration No. 28,561  
Date: January 25, 2004

**Mailing Address:**

NASA, John F. Kennedy Space Center  
Mail Code: CC-A  
Kennedy Space Center, FL 32899  
Telephone No.: (407) 867-7214



PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet

1

of

2

**Complete if Known**

Application Number	10/701-412
Filing Date	10/31/2003
First Named Inventor	Debra Reinhart
Art Unit	Unknown
Examiner Name	Unknown

Attorney Docket Number KSC-12246-2

**U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
		US- 5,868,939	02/09/1999	Oder et al.	
		US- 4,425,261	01/10/1984	Stenius et al.	
		US- 5,990,365	11/23/1999	Chang et al.	
		US- 6,121,371	09/19/2000	Matyjaszewski et al.	
		US- 6,423,531	07/23/2002	Hince et al.	
		US- 5,857,810	01/12/1999	Cantrell et al.	
		US- 5,587,157	12/24/1996	Cox et al.	
		US- 4,565,635	01/21/1986	Le Du et al.	
		US- 5,833,388	11/10/1998	Edwards et al.	
		US- 6,357,968	03/19/2002	Dwyer et al.	
		US- 6,398,960	06/04/2002	Borden et al.	
		US- 4,983,217	01/08/1991	Lopez Quintela et al	
		US- 5,278,106	01/11/1994	Nakashima et al.	
		US-			

**FOREIGN PATENT DOCUMENTS**

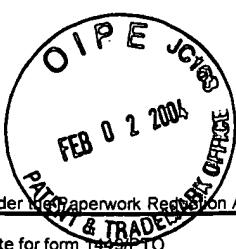
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
		WO 97/09114	03/13/1997	Kizling et al.		

Examiner Signature		Date Considered
--------------------	--	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.



PTO/SB/08B (08-03)

Approved for use through 07/31/2006. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449, PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**Complete if Known**

Application Number	10/701,412
Filing Date	10/31/2003
First Named Inventor	Debra Reinhart
Art Unit	Unknown
Examiner Name	Unknown

Sheet 2 of 2 Attorney Docket Number KSC-12246-2

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		GEIGER ET AL., "The In Situ Treatment of DNAPL with Zero-Valent Iron Emulsions," found with Google.com	
		Environmental Technologies, Inc. "Permeable Reactive Barrier Update," May 2000, from www.eti.ca	
		Center for Groundwater Research, "Zero Valent Iron," from http://cgr.ese.ogi.edu/iron/iron	
		LEE AND BORDEN, "Technology Application of Low Cost Emplacement of Insoluble Organic Substate for Enhanced In Situ Reductive Dechlorination	
		of Halogenated Aliphatic Hydrocarbons," AFCEE, Dover Air Force Base (Delaware), (October 28, 1999).	

Examiner Signature	Date Considered
--------------------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.